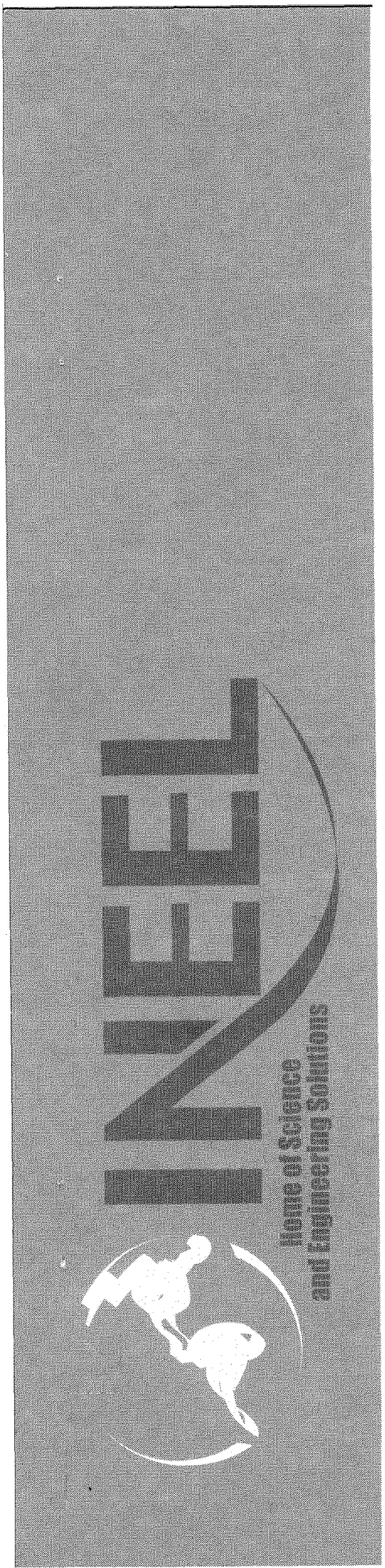
INEEL/EXT-03-01126
August 2003

2003 Annual Inspection Summary for the Stationary Low-Power Reactor-1 Burial Ground

Operable Unit 5-05



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1. GENERAL

The site-specific *Stationary Low-Power Reactor-1 and Boiling Water Reactor Experiment-I Burial Grounds Engineered Barriers Projeci Operation and Maintenance Plan, Operable Units 5-05 and 6-02* (INEEL 1997) requires annual inspections of the Stationary Low-Power Reactor *(SL)* No. 1 engineered barriers—designated as a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) site—Auxiliary Reactor Area **(AM)-06** (Operable Unit [OU] 5-05). Commensurate with recommendations from the U.S Environmental Protection Agency's first five-year review,[a] the site was visually inspected on June 3,2003, to determine if any areas were affected by erosion or subsidence, and to identify missing or damaged institutional controls. Inspection of the revegetated areas for proper growth was only required for a three-year period after the completion of the remedial action, ending in the fall of 2000; however, observations and notes were made regarding the vegetative cover at the site.

This report contains three attachments that complement the specific inspection items in the following sections. The attachments are as follows: (1) a checklist used during the inspection to document the inspection findings, (2) photographs that were taken of the SL-1 site at the time of the inspection, and (3) results of **a** radiological survey of the SL-1 site. The survey was conducted June 3,2003, to verify that radiation levels were consistent with the previous years' exposure levels.

The 2003 annual inspection is the eighth round of monitoring and maintenance activities for the SL-I site and marks the second inspection of the second five-year period from the start of the remedial action in July 1996. **As** stated in the *Record of Decision for Power Burst Facility and Auxiliary Reactor Area* (ROD) (DOE-ID 2000), the SL-1 site has been incorporated under OU 5-12, and as such, the next five-year review for the SL-1 site is scheduled for completion in CY2005. Annual inspections of the SL-1 site will continue under the purview of the waste area group (WAG) 5 comprehensive Operation and Maintenance Plan (INEEL 1997), until the comprehensive ROD (DOE-ID 2000) has been completely implemented and the first five-year review under the OU 5-12 ROD, scheduled for CY2005, has been successfully completed. At that time, the administrative maintenance of the institutional controls listed in the WAG 5 comprehensive ROD will be integrated into the administrative authority of Long-Term Stewardship.

2. ENGINEERED BARRIERS

The engineered barriers at the SL-1 site were visually inspected for evidence of subsidence, erosion, intrusion or other conditions that would indicate that the integrity of the barriers has been compromised. It was noted that the barriers at the site appeared intact with no visible evidence of subsidence or erosion. Suitable habitat for small mammals common at the INEEL is present in the areas surrounding the covers, and a mountain cottontail rabbit (*Sylvilagus nuttallii)* was observed on the east cover. There is extensive evidence of rabbit activity around the barrier at SL-1. It is difficult to determine

a. EPA, 2001, "U.S. Environmental Protection Agency Region 10 Office of Environmental Cleanup Remedial Action Review Idaho National Engineering and Environmental Laboratory Stationary Low-Power Reactor No. 1 Boiling Water Reactor Experiment-1 Burial Grounds," **U.S.** Environmental Protection Agency Region 10, August **17,2001.**

if the rabbits are burrowing under the covers; however, they are likely using the shelter provided by the riprap for nests. As such, it is very unlikely that the mountain cottontails pose a threat to the integrity of the covers at SL-I. There was no other noticeable animal or insect intrusion into the barriers. All inspection items indicate that the integrity and effectiveness of the barriers remain intact. Attachments 1 and 2 detail the inspection results.

3. REVEGETATED AREAS

The revegetated areas were visually inspected for evidence of erosion. There were no visual indications of soil movement, pedestalling of plants or rocks, rills, gullies, or other modes of erosion. Although it was not required for the year 2003 annual inspection, a qualitative assessment of the vegetative cover was also performed. The new spring growth grass appeared to be well established. The results of the inspection of the revegetated areas are included in Attachments 1 and 2.

4. INSTITUTIONAL CONTROLS

The institutional controls at the SL-1 site consist of CERCLA signage, permanent markers, fencing, and radiological postings. **As** indicated on the site map in Attachment 1, the institutional controls were all found in place and intact.

5. RADIOLOGICAL SURVEYS

Radiological surveys were conducted around the perimeters of the engineered covers at the SL-1 site. A radiological control technician performed the surveys on June **3,** 2003, with a micro-Rem (μR) survey meter. The results of those surveys are shown in Attachment **3.** The surveys were performed around the perimeters of the SL-1 covers and the fence, using the hand-held instrumentation at waist height. The dose rates at the SL-1 site ranged from 7 to 20 μR/hr. These exposure rates are consistent with past survey results, which have ranged from 7 to 35 μR/hr at SL-1.

6. CONCLUSIONS

The engineered covers for the SL-1 site appear to be performing as designed, with no visual evidence of subsidence, erosion or intrusion. Institutional controls at the site, which include fencing, signage, and protective barriers, appear to be effective in securing the site against unauthorized human intrusion. The revegetation effort appears to have been successful, as evidenced by the coverage of perennial grasses and the absence of weeds or shrubs.

7. REFERENCES

DOE-ID, 2000, *Record of Decision for Power Burst Facility and Auxiliary Reactor Area,* DOE/ID-10700, U.S. Department of Energy Idaho Operations Office; U.S. Environmental Protection Agency, Region 10; Idaho Department of Health and Welfare, January 2000.

INEEL, 1997, *Stationary Low-Power Reactor-I and Boiling Water Reactor Experiment-I Burial Grounds Engineered Barriers Project Operation and Maintenance Plan, Operable Units 5-05 and 6-01,* INEL-95/0625, Revision 0, Idaho National Engineering and Environmental Laboratory, July 1997.

Attachment 1

2003 Annual Inspection Checklist and Site Map

INSPECTION REPORT FORM FOR SL-1 BURIAL GROUND ENGINEERED BARRIER
AS REQUIRED BY OU 5-05 OPERATING AND MAINTENANCE PLAN

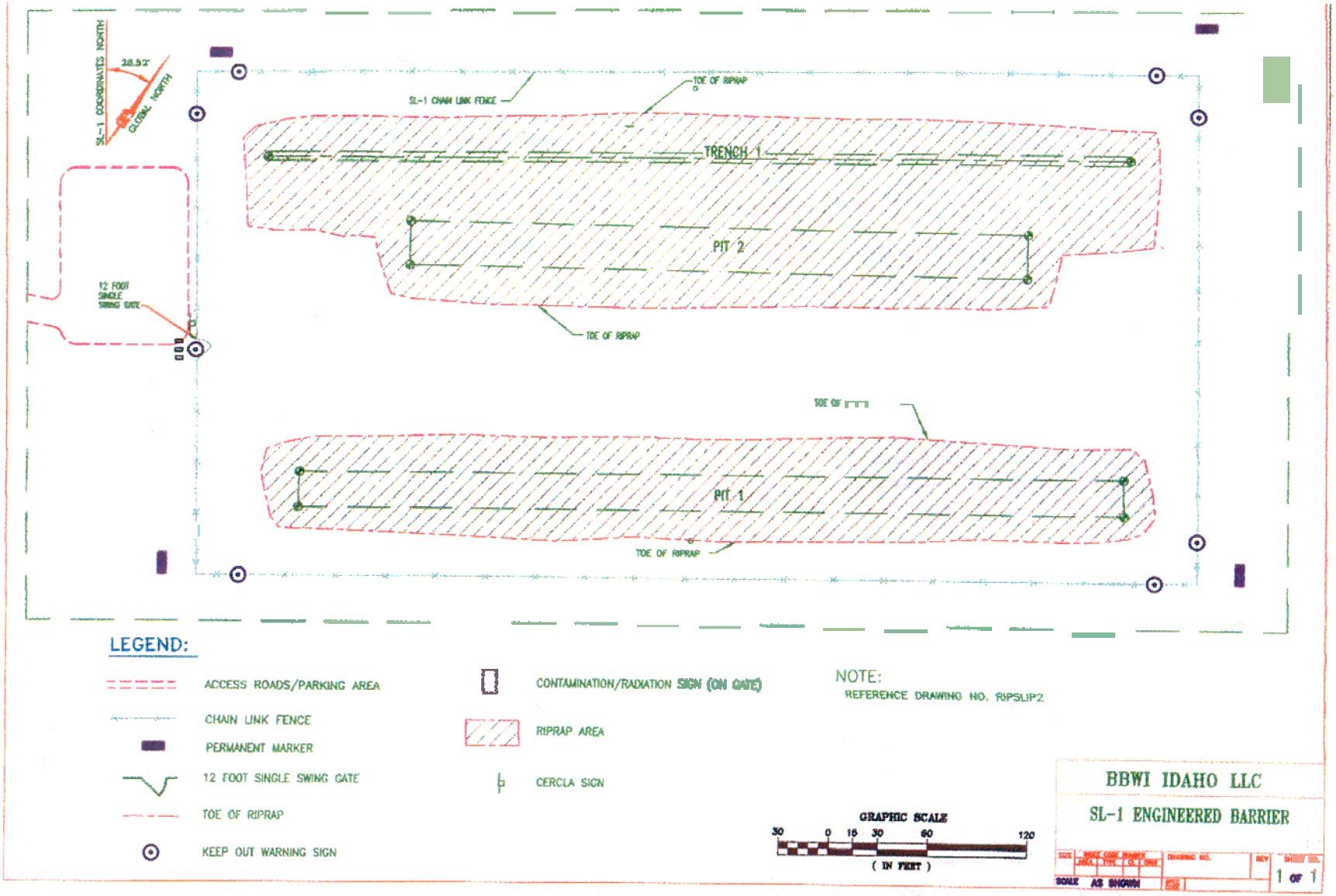
☐ SEMI-ANNUAL ☒ ANNUAL Inspection of SL-1 Barrier

INSPECTION ACTIVITY	INSPECTOR SIGNATURE	INSP. DATE	COMMENTS/RECOMMENDED REPAIR
REVEGETATED AREAS			
1. Inspect for non growth areas	John R. Giles	03-Jun-2003	Vegetation is well established around the perimeters of the rip rap covers and around the perimeter of the SL-1 burial ground fence. Some rabbit brush observed inside the fence.
2. Inspect for sparse growth areas.	John R. Giles	03-Jun-2003	
3. Inspect for weed encroachment	John R. Giles	03-Jun-2003	
RIPRAP BARRIER			
1. Inspect for erosion areas	John R. Giles	03-Jun-2003	No erosion, subsidence or slope movement visible.
2. Inspect for subsidence areas.	John R. Giles	03-Jun-2003	
3. Survey for slope movement (yearly).	John R. Giles	03-Jun-2003	Radiation survey conducted by INEEL RADCON, with no evidence of elevated levels of radiation above previous years' inspections.
4. Rad survey.	John R. Giles	03-Jun-2003	
INSTITUTIONAL CONTROLS			
1. Document that fences restrict access.	John R. Giles	03-Jun-2003	All fencing and postings are in place and intact. There are four marble monuments with brass cap markers around the perimeter of the fence. The CERCLA sign needs to be updated with the WCC phone number (526-1515) for contact information.
2. Document that signs/barriers are in place and in good condition.	John R. Giles	03-Jun-2003	

Name of Inspector John R. Giles

Photographs Taken ☒ Yes ☐ No

Qualifications/Title Principle Scientist

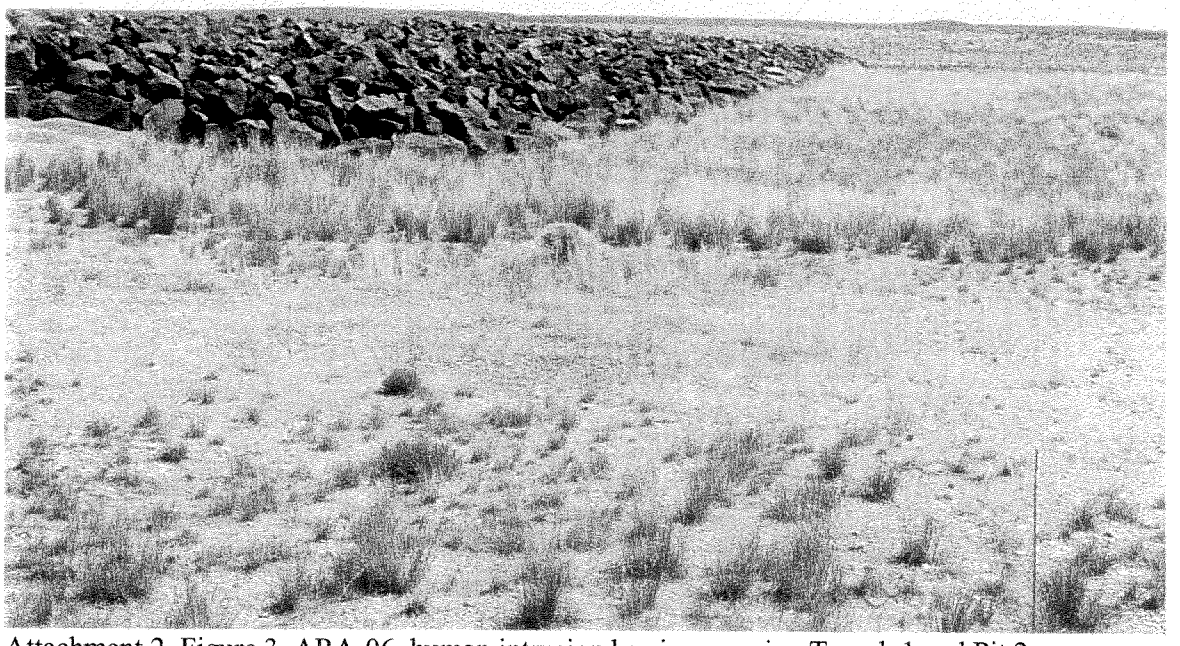

SL-1 COORDINATES NORTH
28.5°
GLOBAL NORTH
SL-1 CHAIN LINK FENCE
TOE OF RIPRAP
TRENCH 1
PIT 2
12 FOOT SINGLE SWING GATE
TOE OF RIPRAP
TOE OF
PIT 1
TOE OF RIPRAP
LEGEND:
ACCESS ROADS/PARKING AREA
CHAIN LINK FENCE
PERMANENT MARKER
12 FOOT SINGLE SWING GATE
TOE OF RIPRAP
KEEP OUT WARNING SIGN
CONTAMINATION/RADIATION SIGN (ON GATE)
RIPRAP AREA
CERCLA SIGN
NOTE:
REFERENCE DRAWING NO. RIPSLIP2
GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
BBWI IDAHO LLC
SL-1 ENGINEERED BARRIER
SIZE
DRAWING NO.
REV
SHEET NO.
SCALE AS SHOWN
1 OF 1

Attachment 2

2003 Annual Inspection Photographs

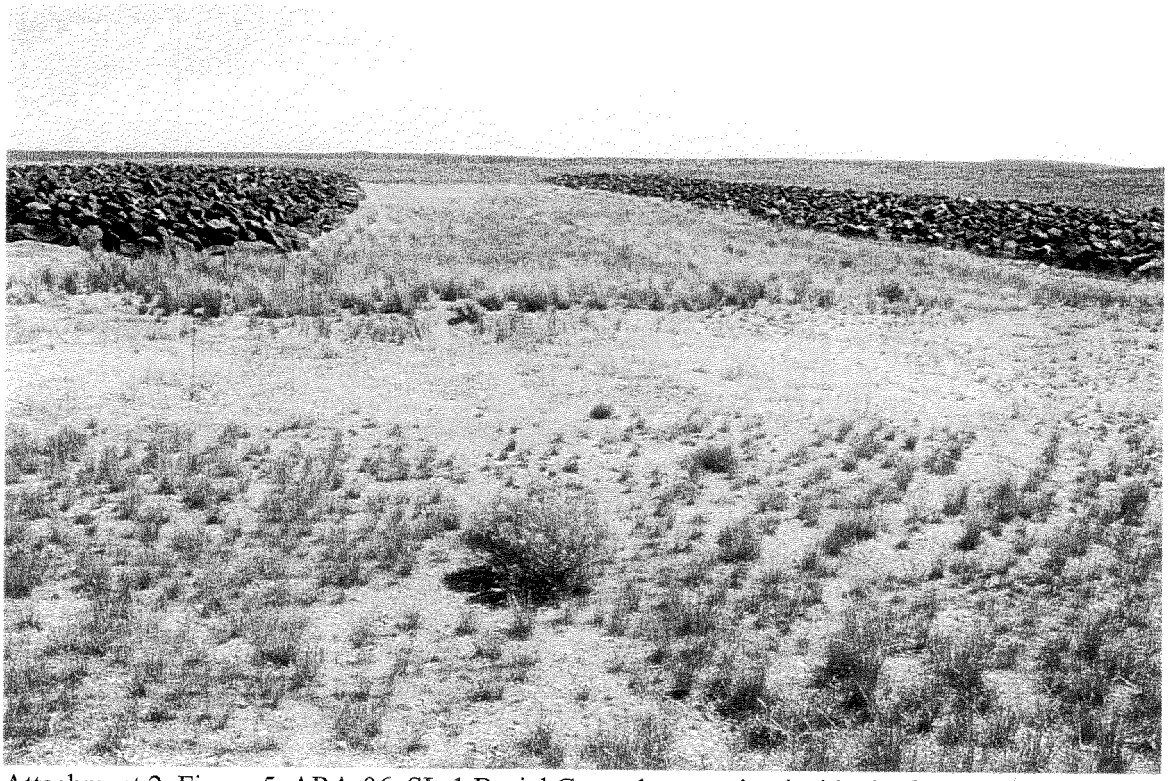
Attachment 2, Figure 1. ARA-06, SL-1 Burial Ground access gate with radiological control postings and CERCLA sign (Picture PD030195-01).

Attachment 2, Figure 2. ARA-06, SL-1 Burial Ground monument with burial ground cap and fence enclosure in background (Picture PD030195-06).



Attachment 2, Figure 3. ARA-06, human intrusion barrier covering Trench 1 and Pit 2 (Picture PD030195-03).

Attachment 2, Figure 4. ARA-06, human intrusion barrier covering Pit 1 (Picture PD030195-08).



Attachment 2, Figure 5. ARA-06, SL-1 Burial Ground vegetation inside the fence (Picture PD030195-04).

Attachment 3

2003 Annual Inspection Radiological Survey Report

441.45#
10/10/97
Rev. #03

RADIOLOGICAL SURVEY REPORT

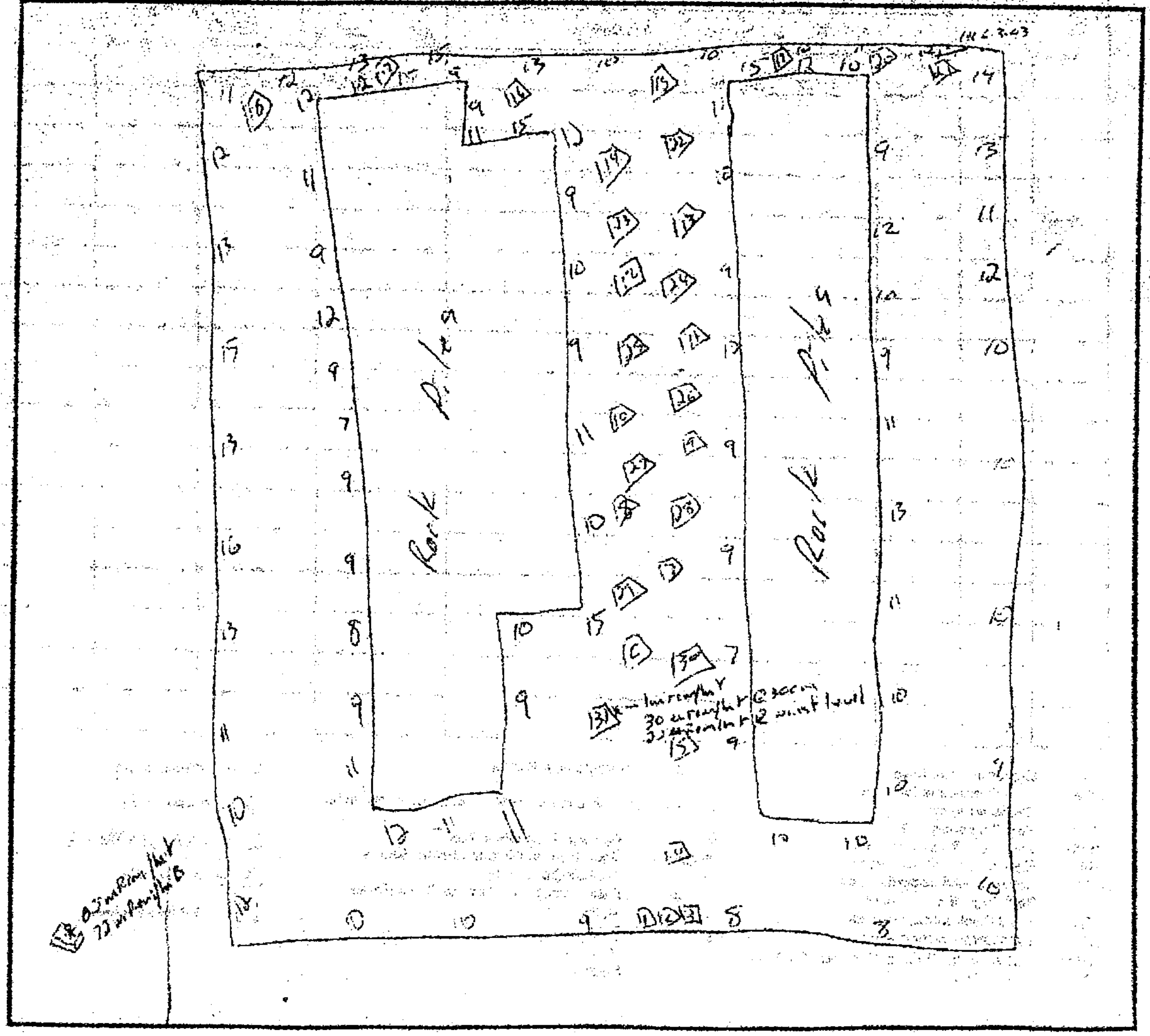
Copy

BARCODE #

BLDG.: WA
AREA/ROOM: SL-1 Burial Grounds
RWP #: 31009652
LOG #: 10
DATE: 6-3-03
TIME: 1600

☐ ROUTINE JOB DESCRIPTION
☒ NON ROUTINE (SPECIFY) ☐ FOLLOW UP
COMMENTS: Annual survey for John Giles
All readings except as noted were in uR/hr.

RCT: Larry [illegible] PRINT/SIGNATURE
REVIEWED BY: [signature]



441.45#
10/10/97
Rev. #03

RADIOLOGICAL SURVEY REPORT

INSTRUMENTS		
Type	Serial #	Efficiency
7A	800898	10 %
		%
		%
Scaler	393541	44.0 %βγ
		30.4 %α
Micro rem	804575	
E-520	803135	

SURVEY DATA AND LEGEND

ALL SWIPE, LARGE AREA WIPE (LAW), AND DIRECT SCAN SURVEY LOCATIONS ARE IDENTIFIED ON THE MAP. THOSE LOCATIONS WHERE ACTIVITY IS GREATER THAN OR EQUAL TO THE RADCON MANUAL (RCM) TABLE 2-2 LIMITS* ARE RECORDED BELOW.

SWIPE No.	LAW No.	DIRECT SCAN No.	LOCATION OR ITEM DESCRIPTION	SWIPE/SCAN (dpm/100cm²)		LAW (dpm)	
				βγ	α	βγ	α
*		*	RCM Table 2-2 limits used for this survey.	1000 5000	20 1500		
		31	Rubber Chunk	30000 cpm @ ~1" with 2A			

CA Contamination Area
HCA High Contamination Area
RA Radiation Area
HRA High Radiation Area
VHRA Very High Radiation Area
RMA Radioactive Material Area
ARA Airborne Radioactivity Area
RBA Radiological Buffer Area
FCA Fixed Contamination Area
SCA Soil Contamination Area
URMA Underground Radioactive Material Area
SOP Step-Off Pad

-x—x- Radiological Barrier

ALL dose rates are in mrem/hr, unless otherwise noted.

General Area Dose Rate
#@#(cm) Dose Rate at Distance From Source
'# Contact Dose Rate
#β / #γ Beta Corrected / Gamma Dose Rates
α Alpha
β Beta
γ Gamma
n Neutron

□ = Direct Scan
○ = Swipe (Smear)
L = Large Area Wipe (LAW)
△ = Air Sample
⌂ = Tritium Swipe